UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Fujifilm Corporation
Petitioner

v.

Sony Corporation
Patent Owner

_____

United States Patent 7,029,774

_____

DECLARATION OF SCOTT BENNETT, Ph.D.
31 March 2017

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I, Scott Bennett, hereby declare under penalty of perjury:

I. INTRODUCTION

1. I have personal knowledge of the facts and opinions set forth in this declaration, I believe them to be true, and if called upon to do so, I would testify competently to them. I have been warned that willful false statements and the like are punishable by fine or imprisonment, or both.

2. I am a retired academic librarian working as a Managing Partner of the firm Prior Art Documentation LLC at 711 South Race Street, Urbana, IL, 61801-4132. Attached as Appendix A is a true and correct copy of my Curriculum Vitae describing my background and experience. Further information about my firm, Prior Art Documentation Services LLC, is available at www.priorartdocumentation.com.

3. I have been retained by Baker Botts LLP. to authenticate and establish the dates of public accessibility of certain documents in an *inter partes* review proceedings for U.S. Patent No. 7,029,774. For this service, I am being paid my usual hourly fee of $88/hour. My compensation in no way depends on the substance of my testimony or the outcome of this proceeding.

II. BACKGROUND AND QUALIFICATIONS

4. I was previously employed as follows:

- University Librarian, Yale University, New Haven, CT., 1994-2001;

- Director, The Milton S. Eisenhower Library, The Johns Hopkins University, Baltimore, MD, 1989-1994;
- Assistant University Librarian for Collection Management, Northwestern University, Evanston, IL, 1981-1989;
- Instructor, Assistant, and Associate Professor of Library Administration, University of Illinois at Urbana-Champaign, Urbana, IL, 1974-1981; and
- Assistant Professor of English, University of Illinois at Urbana-Champaign, 1967-1974.

5. Over the course of my work as a librarian, professor of English, researcher, and author of nearly fifty scholarly papers and other publications, I have had extensive experience with cataloging records and online library management systems built around Machine-Readable Cataloging (MARC) standards. I also have substantial experience in authenticating printed documents and establishing the date when they were accessible to researchers.

6. In the course of more than fifty years of academic life, I have myself been an active researcher. I have collaborated with many individual researchers and, as a librarian, worked in the services of thousands of researchers at four prominent research universities. Members of my family are university researchers. Over the years, I have read some of the voluminous professional

literature on the information seeking behaviors of academic researchers. And as an educator, I have a broad knowledge of the ways in which students in a variety of disciplines learn to master the bibliographic resources used in their disciplines. In all of these ways, I have a general knowledge of how researchers work.

III. PRELIMINARIES

7. *Scope of this declaration*. I am not a lawyer and I am not rendering an opinion on the legal question of whether any particular document is, or is not, a "printed publication" under the law.

8. I am, however, rendering my expert opinion on the authenticity of the documents referenced herein and on when and how each of these documents was disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, could have located the documents before 23 May 2004.

9. *Materials considered*. In forming the opinions expressed in this declaration, I have reviewed the documents and attachments referenced herein. These materials are records created in the ordinary course of business by publishers, libraries, indexing services, and others. From my years of experience, I am familiar with the process for creating many of these records, and I know these records are created by people with knowledge of the information in the record. Further, these records are created with the expectation that researchers

and other members of the public will use them. All materials cited in this declaration and its attachments are of a type that experts in my field would reasonably rely upon and refer to in forming their opinions.

10. *Persons of ordinary skill in the art.* I am told by counsel that the subject matter of this proceeding relates to magnetic recording tape.

11. I have been informed by counsel that a "person of ordinary skill in the art at the time of the invention" is a hypothetical person who is presumed to be familiar with the relevant field and its literature at the time of the inventions. This hypothetical person is also a person of ordinary creativity, capable of understanding the scientific principles applicable to the pertinent field.

12. I am told by counsel that persons of ordinary skill in this subject matter or art would have a (a) a bachelor's degree in materials science, electrical engineering, mechanical engineering, chemistry, or a closely related field, and at least five years of experience—either in industry or academic research—relating to magnetic tape, or (b) a master's degree or higher in materials science, electrical engineering, mechanical engineering, chemistry, or a closely related field, and at least three years of experience—either in industry or academic research—relating to magnetic tape. A person with less education but more relevant practical experience, or more relevant education but less practical experience, may also meet this standard.

13. It is my opinion that such a person would have been engaged in advanced research starting at least in graduate school, learning though study and practice in the field and possibly through formal instruction the bibliographic resources relevant to his or her research. In the 2000s, such a person would have had access to a vast array of long-established print resources in materials science, electrical engineering, mechanical engineering, and chemistry as well as to a rich set of online resources providing indexing information, abstracts, and full text services for materials science, electrical engineering, mechanical engineering, and chemistry.

14. *Library catalog records*. Some background on MARC formatted records, OCLC, WorldCat, and OCLC's Connexion is needed to understand the library catalog records discussed in this declaration.

15. Libraries world-wide use the MARC format for catalog records; this machine readable format was developed at the Library of Congress in the 1960s.

16. MARC formatted records provide a variety of subject access points based on the content of the document being cataloged. All may be found in the MARC Fields 6XX. For example, MARC Field 600 identifies personal names used as subjects and the MARC Field 650 identifies topical terms. A researcher

might discover material relevant to his or her topic by a search using the terms employed in the MARC Fields 6XX.

17. The MARC Field 040, subfield a, identifies the library or other entity that created the original catalog record for a given document and transcribed it into machine readable form. The MARC Field 008 identifies the date when this first catalog record was entered on the file. This date persists in all subsequent uses of the first catalog record, although newly-created records for the same document, separate from the original record, will show a new date. It is not unusual to find multiple catalog records for the same document.

18. WorldCat is the world's largest public online catalog, maintained by the Online Computer Library Center, Inc., or OCLC, and built with the records created by the thousands of libraries that are members of OCLC. WorldCat provides a user-friendly interface for the public to use MARC records; it requires no knowledge of MARC tags and codes. WorldCat records appear in many different catalogs, including the Statewide Illinois Library Catalog. The date a given catalog record was created (corresponding to the MARC Field 008) appears in some detailed WorldCat records as the Date of Entry.

19. Whereas WorldCat records are very widely available, the availability of MARC formatted records varies from library to library.

20. When an OCLC participating institution acquires a document for which it finds no previously created record in OCLC, or when the institution chooses not to use an existing record, it creates a record for the document using OCLC's Connexion, the bibliographic system used by catalogers to create MARC records. Connexion automatically supplies the date of record creation in the MARC Field 008.

21. Once the MARC record is created by a cataloger at an OCLC participating member institution, it becomes available to other OCLC participating members in Connexion and also in WorldCat, where persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it.

22. When a book has been cataloged, it will normally be made available to readers soon thereafter—normally within a few days or (at most) within a few weeks of cataloging.

23. *Indexing*. A researcher may discover material relevant to his or her topic in a variety of ways. One common means of discovery is to search for relevant information in an index of periodical and other publications. Having found relevant material, the researcher will then normally obtain it online, look for it in libraries, or purchase it from the publisher, a bookstore, a document delivery service, or other provider. Sometimes, the date of a document's public

accessibility will involve both indexing and library date information. Date information for indexing entries is, however, often unavailable. This is especially true for online indices.

24. Indexing services use a wide variety of controlled vocabularies to provide subject access and other means of discovering the content of documents. The formats in which these access terms are presented vary from service to service.

25. Online indexing services commonly provide bibliographic information, abstracts, and full-text copies of the indexed publications, along with a list of the documents cited in the indexed publication. These services also often provide lists of publications that cite a given document. A citation of a document is evidence that the document was publicly available and in use by researchers no later than the publication date of the citing document.

26. Prominent indexing services include:

27. Scopus. Produced by Elsevier, a major publisher, Scopus is the largest database of abstracts and citations of peer-reviewed literature. Its scope includes the social sciences, science, technology, medicine, and the arts. It includes 60 million records from more than 21,500 titles from some 5,000 international publishers. Coverage includes 360 trade publications, over 530 book

series, more than 7.2 million conference papers, and 116,000 books. Records date from 1823.

IV. OPINIONS REGARDING INDIVIDUAL DOCUMENTS

Document 1. International Standard ISO 4287. Geometrical Product Specifications (GPS) – Surface texture: Profile method – Terms, definitions and surface texture parameters (Genève, Switzerland: International Organization for Standardization, 1997).

1. Authentication

28. Document 1 is a standards document that specifies terms, definitions, and parameters for the determination of surface textures. Published in 1997, "this first edition of ISO 4287 cancels and replaces ISO 4287-1:1984. This revision of ISO 4387-1:1984; is a major rewrite and reorganization that together with ISO 11562 and ISO 3274, additionally defines the waviness profile, the primary profile and their parameters in a consistent manner" (p. 4 of the Attachment 1a PDF, discussed next).

29. Attachment 1a is a true and accurate copy of the title page of Document 1 and p. 14 of the copy of Document 1 purchased by my firm from the American National Standards Institute on 30 March 2017. Attachment 1b is a true and accurate copy of the title page of Document and p. 14 of the copy of

Document 1 provided by counsel.[1] I have compared Attachments 1a and 1b and find them to be substantively the same document.

30. Attachment 1c is a true and accurate copy of an SAI Global Standards Infobase index record for Document 1. SAI Global Standards Infobase describes itself as "the leading bibliographic standards database. It covers hundreds of thousands of worldwide standards. Coverage extends across the industrialized world" (https://www.ili-info.com/cgi-bin/info/us/whatis_standards). Attachment 1d is a true and correct copy of an International Organization Standards index record for Document 1. It provides information about the revisions and corrections to Document 1 and includes the statement that "this standard was last reviewed and confirmed in 2015" with the explanatory note that "therefore this version remains current."

31. Attachment 1e is a true and correct screen capture of part of the International Organization for Standardization Web page index record for Document 1 (https://www.iso.org/obp/ui/#iso:std:iso:4287:ed-1:v1:en,fr), from which copies of Document 1 may be ordered. Attachment 1e includes some

[1] Copy restrictions on the copies of Document 1 represented in Attachments 1a and 1b make it impossible to reproduce these copies of Document 1, in their entirety, as attachments to this declaration. I have both copies in my possession and have compared them both, in their entirety; they are substantively the same document.

preliminary pages from Document; I have compared these preliminary pages with the preliminary pages in Attachments 1a and 1b and find them to be identical.

32. I conclude, based on finding Document 1 indexed online and on finding library catalog records for Document 1 (discussed below), that Document 1 is an authentic document and that Attachments 1a and 1b are authentic copies of Document 1.

2. **Public accessibility**

33. Attachment 1f is a true and accurate copy of a Statewide Illinois Library catalog record for Document 1, showing this publication is held by 10 libraries world-wide. Attachment 1f also indicates that Document 1 was cataloged or indexed in a meaningful way—including being cataloged by subject. This library catalog record, taken with the online records described above, make Document 1 bibliographically accessible to the public interested in the art; and an ordinarily skilled researcher, exercising reasonable diligence, would have had no difficulty finding copies of Document 1.

34. The North Carolina State University Library is one of the libraries identified in Attachment 1f as holding Document 1. Attachment 1g is a true and correct copy of the North Carolina State University Library catalog record, in MARC format, for Document 1. In Attachment 1g, the MARC Field 040, subfield a, indicates that Document 1 was first cataloged by the University of

Oklahoma Library (OCLC code = OKU). The MARC Field 008 indicates this catalog record was created on 15 February 2001. Allowing for some time between cataloging Document 1 and its appearance on library shelves, where it would be publicly available, it is my opinion that Document 1 was publicly available in at least one library by March 2001.

35. Attachment 1h is a true and accurate copy of the first page of a Scopus list of 454 publications citing Document 1. One publication citing Document 1 is J Peters and A. Schöne, "Nondestructive evaluation of surface roughness by speckle correlation techniques," Proceeds of SPIE – The International Society for Optical Engineering, 3399 (1998): 45-56. Attachment 1i is a true and accurate copy of the Scopus record for the Peters and Schöne paper, showing Document 1 as the 14th item in its list of references.

3. Conclusion

36. Based on the evidence presented here—a readily available standards publication, online records, library cataloging, and citations—**it is my opinion that Document 1 is an authentic document that was publicly available in at least one library by March 2001**. The citation evidence presented here indicates that Document 1 was in actual use by researchers at least by 1998.

V. ATTACHMENTS

37. The attachments attached hereto are true and correct copies of the materials identified above. Helen Sullivan is a Managing Partner in Prior Art Documentation Services LLC (see http://www.priorartdocumentation.com/hellen-sullivan/ **)**. One of her primary responsibilities in our partnership is to secure the bibliographic documentation used in attachments to our declarations.

38. Ms. Sullivan and I work in close collaboration on the bibliographic documentation needed in each declaration. I will sometimes request specific bibliographic documents or, more rarely, secure them myself. In all cases, I have carefully reviewed the bibliographic documentation used in my declaration. My signature on the declaration indicates my full confidence in the authenticity, accuracy, and reliability of the bibliographic documentation used.

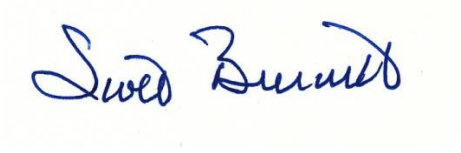
39. Each Attachment has been marked with an identifying label on the top of each page. No alterations other than these noted labels appear in these attachments, unless otherwise noted. All attachments were created on 29-31 March 2017 and all URLs referenced in this declaration were available 30 March 2017.

VI. CONCLUSION

40. I reserve the right to supplement my opinions in the future to respond to any arguments that Patent Owner or its expert(s) may raise and to take into account new information as it becomes available to me.

41. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed this 31st day of March, 2017 in Urbana, Illinois.



Scott Bennett

Appendix A

SCOTT BENNETT
Yale University Librarian Emeritus

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Urbana, Illinois 61801-4132
2scottbb@gmail.com
217-367-9896

EMPLOYMENT

Retired, 2001. Retirement activities include:

- Managing Partner in Prior Art Documentation Services, LLC, 2015-. This firm provides documentation services to patent attorneys; more information is available at http://www.priorartdocumentation.com
- Consultant on library space design, 2004- . This consulting practice is rooted in a research, publication, and public speaking program conducted since I retired from Yale University in 2001. I have served more than 50 colleges and universities in the United States and abroad with projects ranging in likely cost from under $50,000 to over $100 million. More information is available at http://www.libraryspaceplanning.com/
- Senior Advisor for the library program of the **Council of Independent Colleges**, 2001-2009
- Member of the Wartburg College Library Advisory Board, 2004-
- Visiting Professor, Graduate School of Library and Information Science, **University of Illinois at Urbana-Champaign**, Fall 2003

University Librarian, **Yale University**, 1994-2001

Director, The Milton S. Eisenhower Library, **The Johns Hopkins University**, Baltimore, Maryland, 1989-1994

Assistant University Librarian for Collection Management, **Northwestern University**, Evanston, Illinois, 1981-1989

Instructor, Assistant and Associate Professor of Library Administration**, University of Illinois at Urbana-Champaign**, 1974-1981

Assistant Professor of English, **University of Illinois at Urbana-Champaign**, 1967-1974

Woodrow Wilson Teaching Intern, **St. Paul's College**, Lawrenceville, Virginia, 1964-1965

EDUCATION

University of Illinois, M.S., 1976 (Library Science)
Indiana University, M.A., 1966; Ph.D., 1967 (English)
Oberlin College, A.B. magna cum laude, 1960 (English)

HONORS AND AWARDS

Morningside College (Sioux City, IA) Doctor of Humane Letters, 2010

American Council of Learned Societies Fellowship, 1978-1979; Honorary Visiting Research Fellow, Victorian Studies Centre**, University of Leicester**, 1979; **University of Illinois** Summer Faculty Fellowship, 1969

Indiana University Dissertation Year Fellowship and an **Oberlin College** Haskell Fellowship, 1966-1967; **Woodrow Wilson** National Fellow, 1960-1961

PROFESSIONAL ACTIVITIES

American Association for the Advancement of Science: Project on Intellectual Property and Electronic Publishing in Science, 1999-2001

American Association of University Professors: University of Illinois at Urbana-Champaign Chapter Secretary and President, 1975-1978; Illinois Conference Vice President and President, 1978-1984; national Council, 1982-1985, Committee F, 1982-1986, Assembly of State Conferences Executive Committee, 1983-1986, and Committee H, 1997-2001 ; Northwestern University Chapter Secretary/Treasurer, 1985-1986

Association of American Universities: Member of the Research Libraries Task Force on Intellectual Property Rights in an Electronic Environment, 1993-1994, 1995-1996

Association of Research Libraries: Member of the Preservation Committee, 1990-1993; member of the Information Policy Committee, 1993-1995; member of the Working Group on Copyright, 1994-2001; member of the Research Library Leadership and Management Committee, 1999-2001; member of the Board of Directors, 1998-2000

Carnegie Mellon University: Member of the University Libraries Advisory Board, 1994

Center for Research Libraries: Program Committee, 1998-2000

Johns Hopkins University Press: Ex-officio member of the Editorial Board, 1990-1994; Co-director of Project Muse, 1994

Library Administration and Management Association, Public Relations Section, Friends of the Library Committee, 1977-1978

Oberlin College: Member of the Library Visiting Committee, 1990, and of the Steering Committee for the library's capital campaign, 1992-1993; President of the Library Friends, 1992-1993, 2004-2005; member, Friends of the Library Council, 2003-

Research Society for Victorian Periodicals: Executive Board, 1971-1983; Co-chairperson of the Executive Committee on Serials Bibliography, 1976-1982; President, 1977-1982

A Selected Edition of W.D. Howells (one of several editions sponsored by the MLA Center for Editions of American Authors): Associate Textual Editor, 1965-1970; Center for Editions of American Authors panel of textual experts, 1968-1970

Victorian Studies: Editorial Assistant and Managing Editor, 1962-1964

Wartburg College: member, National Advisory Board for the Vogel Library, 2004-

Some other activities: Member of the **Illinois State Library** Statewide Library and Archival Preservation Advisory Panel; member of the **Illinois State Archives** Advisory Board; member of a committee advising the **Illinois Board of Higher Education** on the cooperative management of research collections; chair of a major collaborative research project conducted by the **Research Libraries Group** with support from Conoco, Inc.; active advisor on behalf of the **Illinois Conference AAUP** to faculty and administrators on academic freedom and tenure matters in northern Illinois.

Delegate to **Maryland Governor's Conference on Libraries and Information Service**; principal in initiating state-wide preservation planning in Maryland; principal in an effort to widen the use of mass deacidification for the preservation of library materials through cooperative action by the **Association of Research Libraries** and the **Committee on Institutional Cooperation**; co-instigator of a campus-wide information service for **Johns Hopkins University**; initiated efforts with the **Enoch Pratt Free Library** to provide information services to Baltimore's Empowerment Zones; speaker or panelist on academic publishing, copyright, scholarly communication, national and regional preservation planning, mass deacidification.

Consultant for the **University of British Columbia** (1995), **Princeton University** (1996), **Modern Language Association**, (1995, 1996), **Library of Congress** (1997), **Center for Jewish History** (1998, 2000-), **National Research Council** (1998); Board of Directors for the **Digital Library Federation**, 1996-2001; accreditation visiting team at **Brandeis University** (1997); mentor for **Northern Exposure to Leadership** (1997); instructor and mentor for ARL's **Leadership and Career Development Program** (1999-2000)

At the **Northwestern University Library**, led in the creation of a preservation department and in the renovation of the renovation, for preservation purposes, of the Deering Library book stacks.

At the **Milton S. Eisenhower Library**, led the refocusing and vitalization of client-centered services; strategic planning and organizational restructuring for the library; building renovation planning. Successfully completed a $5 million endowment campaign for the humanities collections and launched a $27 million capital campaign for the library.

At the **Yale University Library**, participated widely in campus-space planning, university budget planning, information technology development, and the promotion of effective teaching and learning; for the library has exercised leadership in space planning and renovation, retrospective conversion of the card catalog, preservation, organizational development, recruitment of minority librarians, intellectual property and copyright issues, scholarly communication, document delivery services among libraries, and instruction in the use of information resources. Oversaw approximately $70 million of library space renovation and construction. Was co-principal investigator for a grant to plan a digital archive for Elsevier Science.

Numerous to invitations speak at regional, national, and other professional meetings and at alumni meetings. Lectured and presented a series of seminars on library management at the **Yunnan University Library**, 2002. Participated in the 2005 International Roundtable for Library and Information Science sponsored by the **Kanazawa Institute of Technology** Library Center and the Council on Library and Information Resources.

PUBLICATIONS

"Putting Learning into Library Planning," *portal: Libraries and the Academy*, 15, 2 (April 2015), 215-231.

"How librarians (and others!) love silos: Three stories from the field " available at the Learning Spaces Collaborary Web site, http://www.pkallsc.org/

"Learning Behaviors and Learning Spaces," *portal: Libraries and the Academy*, 11, 3 (July 2011), 765-789.

"Libraries and Learning: A History of Paradigm Change," *portal: Libraries and the Academy*, 9, 2 (April 2009), 181-197. Judged as the best article published in the 2009 volume of *portal*.

"The Information or the Learning Commons: Which Will We Have?" *Journal of Academic Librarianship*, 34 (May 2008), 183-185. One of the ten most-cited articles published in JAL, 2007-2011.

"Designing for Uncertainty: Three Approaches," *Journal of Academic Librarianship*, 33 (2007), 165–179.

"Campus Cultures Fostering Information Literacy," *portal: Libraries and the Academy*, 7 (2007), 147-167. Included in Library Instruction Round Table Top Twenty library instruction articles published in 2007

"Designing for Uncertainty: Three Approaches," *Journal of Academic Librarianship*, 33 (2007), 165–179.

"First Questions for Designing Higher Education Learning Spaces," *Journal of Academic Librarianship*, 33 (2007), 14-26.

"The Choice for Learning," *Journal of Academic Librarianship*, 32 (2006), 3-13.

With Richard A. O'Connor, "The Power of Place in Learning," *Planning for Higher Education*, 33 (June-August 2005), 28-30

"Righting the Balance," in *Library as Place: Rethinking Roles, Rethinking Space* (Washington, DC: Council on Library and Information Resources, 2005), pp. 10-24

Libraries Designed for Learning (Washington, DC: Council on Library and Information Resources, 2003)

"The Golden Age of Libraries," in *Proceedings of the International Conference on Academic Librarianship in the New Millennium: Roles, Trends, and Global Collaboration*, ed. Haipeng Li (Kunming: Yunnan University Press, 2002), pp. 13-21. This is a slightly different version of the following item.

"The Golden Age of Libraries," *Journal of Academic Librarianship*, 24 (2001), 256-258

"Second Chances. An address . . . at the annual dinner of the Friends of the Oberlin College Library November 13 1999," Friends of the Oberlin College Library, February 2000

"Authors' Rights," *The Journal of Electronic Publishing* (December 1999), http://www.press.umich.edu/jep/05-02/bennett.html

"Information-Based Productivity," in *Technology and Scholarly Communication*, ed. Richard Ekman and Richard E. Quandt (Berkeley, 1999), pp. 73-94

"Just-In-Time Scholarly Monographs: or, Is There a Cavalry Bugle Call for Beleaguered Authors and Publishers?" *The Journal of Electronic Publishing* (September 1998), http://www.press.umich.edu/jep/04-01/bennett.html

"Re-engineering Scholarly Communication: Thoughts Addressed to Authors," *Scholarly Publishing*, 27 (1996), 185-196

"The Copyright Challenge: Strengthening the Public Interest in the Digital Age," *Library Journal*, 15 November 1994, pp. 34-37

"The Management of Intellectual Property," *Computers in Libraries*, 14 (May 1994), 18-20

"Repositioning University Presses in Scholarly Communication," *Journal of Scholarly Publishing*, 25 (1994), 243-248. Reprinted in *The Essential JSP. Critical Insights into the World of Scholarly Publishing. Volume 1: University Presses* (Toronto: University of Toronto Press, 2011), pp. 147-153

"Preservation and the Economic Investment Model," in *Preservation Research and Development. Round Table Proceedings, September 28-29, 1992*, ed. Carrie Beyer (Washington, D.C.: Library of Congress, 1993), pp. 17-18

"Copyright and Innovation in Electronic Publishing: A Commentary," *Journal of Academic Librarianship*, 19 (1993), 87-91; reprinted in condensed form in *Library Issues: Briefings for Faculty and Administrators*, 14 (September 1993)

with Nina Matheson, "Scholarly Articles: Valuable Commodities for Universities," *Chronicle of Higher Education*, 27 May 1992, pp. B1-B3

"Strategies for Increasing [Preservation] Productivity*," Minutes of the [119th] Meeting [of the Association of Research Libraries]* (Washington, D.C., 1992), pp. 39-40

"Management Issues: The Director's Perspective," and "Cooperative Approaches to Mass Deacidification: Mid-Atlantic Region," in *A Roundtable on Mass Deacidification*, ed. Peter G. Sparks (Washington, D.C.: Association of Research Libraries, 1992), pp. 15-18, 54-55

"The Boat that Must Stay Afloat: Academic Libraries in Hard Times," *Scholarly Publishing*, 23 (1992), 131-137

"Buying Time: An Alternative for the Preservation of Library Material," ACLS *Newsletter*, Second Series 3 (Summer, 1991), 10-11

"The Golden Stain of Time: Preserving Victorian Periodicals" in *Investigating Victorian Journalism*, ed. Laurel Brake, Alex Jones, and Lionel Madden (London: Macmillan, 1990), pp. 166-183

"Commentary on the Stephens and Haley Papers" in *Coordinating Cooperative Collection Development: A National Perspective*, an issue of *Resource Sharing and Information Networks*, 2 (1985), 199-201

"The Editorial Character and Readership of *The Penny Magazine*: An Analysis," *Victorian Periodicals Review*, 17 (1984), 127-141

"Current Initiatives and Issues in Collection Management*," Journal of Academic Librarianship*, 10 (1984), 257-261; reprinted in *Library Lit: The Best of 85*

"Revolutions in Thought: Serial Publication and the Mass Market for Reading" in *The Victorian Periodical Press: Samplings and Soundings*, ed. Joanne Shattock and Michael Wolff (Leicester: Leicester University Press, 1982), pp. 225-257

"Victorian Newspaper Advertising: Counting What Counts," *Publishing History*, 8 (1980), 5-18

"Library Friends: A Theoretical History" in *Organizing the Library's Support: Donors, Volunteers, Friends*, ed. D.W. Krummel, Allerton Park Institute Number 25 (Urbana: University of Illinois Graduate School of Library Science, 1980), pp. 23-32

"The Learned Professor: being a brief account of a scholar [Harris Francis Fletcher] who asked for the Moon, and got it," *Non Solus*, 7 (1980), 5-12

"Prolegomenon to Serials Bibliography: A Report to the [Research] Society [for Victorian Periodicals]," *Victorian Periodicals Review*, 12 (1979), 3-15

"The Bibliographic Control of Victorian Periodicals" in *Victorian Periodicals: A Guide to Research*, ed. J. Don Vann and Rosemary T. VanArsdel (New York: Modern Language Association, 1978), pp. 21-51

"John Murray's Family Library and the Cheapening of Books in Early Nineteenth Century Britain," *Studies in Bibliography*, 29 (1976), 139-166. Reprinted in Stephen Colclough and Alexis Weedon, eds., *The History of the Book in the West: 1800-1914*, Vol. 4 (Farnham, Surrey: Ashgate, 2010), pp. 307-334.

with Robert Carringer, "Dreiser to Sandburg: Three Unpublished Letters," *Library Chronicle*, 40 (1976), 252-256

"David Douglas and the British Publication of W. D. Howells' Works," *Studies in Bibliography*, 25 (1972), 107-124

as primary editor, W. D. Howells, *Indian Summer* (Bloomington: Indiana University Press, 1971)

"The Profession of Authorship: Some Problems for Descriptive Bibliography" in *Research Methods in Librarianship: Historical and Bibliographic Methods in Library Research*, ed. Rolland E. Stevens (Urbana: University of Illinois Graduate School of Library Science, 1971), pp. 74-85

edited with Ronald Gottesman, *Art and Error: Modern Textual Editing* (Bloomington: Indiana University Press, 1970)--also published in London by Methuen, 1970

"Catholic Emancipation, the *Quarterly Review*, and Britain's Constitutional Revolution," *Victorian Studies*, 12 (1969), 283-304

as textual editor, W. D. Howells, *The Altrurian Romances* (Bloomington: Indiana University Press, 1968); introduction and annotation by Clara and Rudolf Kirk

as associate textual editor, W. D. Howells, *Their Wedding Journey* (Bloomington: Indiana University Press, 1968); introduction by John Reeves

"A Concealed Printing in W. D. Howells," *Papers of the Bibliographic Society of America*, 61 (1967), 56-60

editor, *Non Solus*, A Publication of the University of Illinois Library Friends, 1974-1981

editor, Robert B. Downs Publication Fund, University of Illinois Library, 1975-1981

Reviews, short articles, etc. in *Victorian Studies*, *Journal of English and German Philology*, *Victorian Periodicals Newsletter*, *Collection Management*, *Nineteenth-Century Literature*, *College & Research Libraries*, *Scholarly Publishing Today*, *ARL Newsletter*, *Serials Review*, *Library Issues*, *S[ociety for] S[cholarly] P[ublishing] Newsletter*, and *Victorian Britain: An Encyclopedia*

INTERNATIONAL STANDARD

NORME INTERNATIONALE

ISO 4287

First edition
Première édition
1997-04-01

Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters

Spécification géométrique des produits (GPS) — État de surface: Méthode du profil — Termes, définitions et paramètres d'état de surface

Reference number
Numéro de référence
ISO 4287:1997(E/F)

4.2.2
root mean square deviation of the assessed profile
Pq, Rq, Wq
root mean square value of the ordinate values $Z(x)$ within a sampling length

$$Pq, Rq, Wq = \sqrt{\frac{1}{l}\int_0^l Z^2(x)\,dx}$$

with $l = lp$, lr or lw according to the case.

4.2.2
écart moyen quadratique du profil évalué
Pq, Rq, Wq
moyenne quadratique des valeurs des ordonnées $Z(x)$ à l'intérieur d'une longueur de base

$$Pq, Rq, Wq = \sqrt{\frac{1}{l}\int_0^l Z^2(x)\,dx}$$

avec $l = lp$, lr ou lw suivant le cas.

4.2.3
skewness of the assessed profile
Psk, Rsk, Wsk
quotient of the mean cube value of the ordinate values $Z(x)$ and the cube of Pq, Rq or Wq respectively, within a sampling length

$$Rsk = \frac{1}{Rq^3}\left[\frac{1}{lr}\int_0^{lr} Z^3(x)\,dx\right]$$

NOTES

1 The above equation defines ***Rsk***; ***Psk*** and ***Wsk*** are defined in a similar manner.

2 ***Psk***, ***Rsk*** and ***Wsk*** are measures of the asymmetry of the probability density function of the ordinate values.

3 These parameters are strongly influenced by isolated peaks or isolated valleys.

4.2.3
facteur d'asymétrie du profil évalué
skewness
Psk, Rsk, Wsk
quotient de la moyenne des cubes des valeurs des ordonnées $Z(x)$ par le cube du paramètre Pq, Rq ou Wq selon le cas, à l'intérieur de la longueur de base

$$Rsk = \frac{1}{Rq^3}\left[\frac{1}{lr}\int_0^{lr} Z^3(x)\,dx\right]$$

NOTES

1 L'équation ci-dessus définit ***Rsk***. ***Psk*** et ***Wsk*** sont définis de façon similaire.

2 ***Psk***, ***Rsk*** et ***Wsk*** représentent une mesure de l'asymétrie de la courbe de distribution d'amplitude.

3 Ces paramètres sont fortement influencés par des saillies isolées ou des creux isolés.

4.2.4
kurtosis of the assessed profile
Pku, Rku, Wku
quotient of the mean quartic value of the ordinate values $Z(x)$ and the fourth power of Pq, Rq or Wq respectively within a sampling length

$$Rku = \frac{1}{Rq^4}\left[\frac{1}{lr}\int_0^{lr} Z^4(x)\,dx\right]$$

NOTES

1 The above equation defines ***Rku***; ***Pku*** and ***Wku*** are defined in a similar manner.

2 ***Pku***, ***Rku*** and ***Wku*** are measures of the sharpness of the probability density function of the ordinate values.

3 These parameters are strongly influenced by isolated peaks or isolated valleys.

4.2.4
facteur d'aplatissement du profil évalué
kurtosis
Pku, Rku, Wku
quotient de la moyenne des valeurs à la puissance 4 des ordonnées $Z(x)$ par la valeur à la puissance 4 du paramètre Pq, Rq ou Wq selon le cas, à l'intérieur d'une longueur de base

$$Rku = \frac{1}{Rq^4}\left[\frac{1}{lr}\int_0^{lr} Z^4(x)\,dx\right]$$

NOTES

1 L'équation ci-dessus définit ***Rku***; ***Pku*** et ***Wku*** sont définis de façon similaire.

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ISO 4287

First edition
Première édition
1997-04-01

Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters

Spécification géométrique des produits (GPS) — État de surface: Méthode du profil — Termes, définitions et paramètres d'état de surface

Reference number
Numéro de référence
ISO 4287:1997(E/F)

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quotient de la moyenne des cubes des valeurs des ordonnées $Z(x)$ par le cube du paramètre Pq, Rq ou Wq selon le cas, à l'intérieur de la longueur de base

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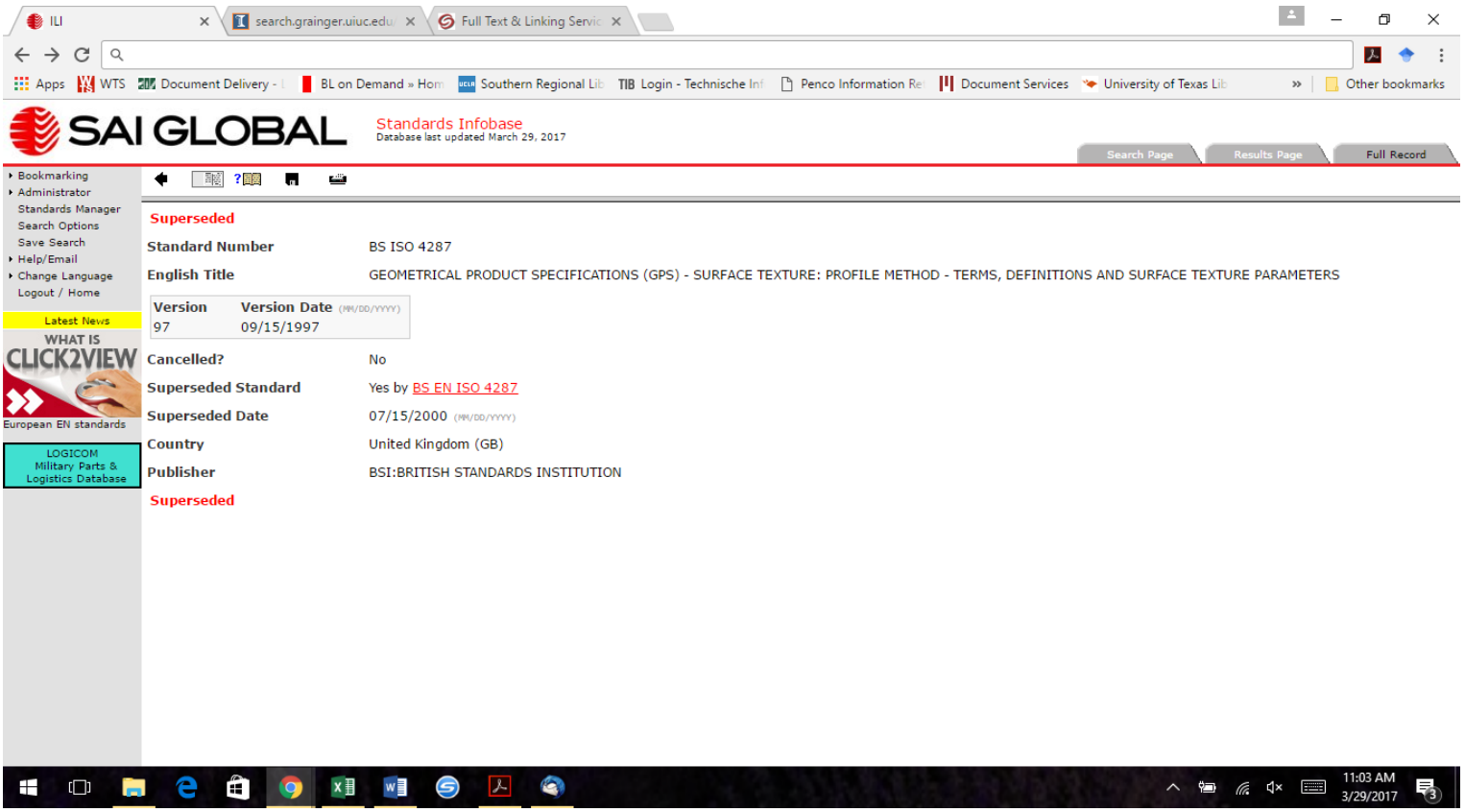

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ISO 4287:1997

Preview

Geometrical Product Specifications (GPS) -- Surface texture: Profile method -- Terms, definitions and surface texture parameters

This standard was last reviewed and confirmed* in 2015.
*Therefore this version remains current

General information

Current status : Published

Publication date : 1997-04

Edition : 1

Number of pages : 25

Technical Committee : ISO/TC 213 Dimensional and geometrical product specifications and verification

ICS : 17.040.20 Properties of surfaces | 01.040.17 Metrology and measurement. Physical phenomena (Vocabularies)

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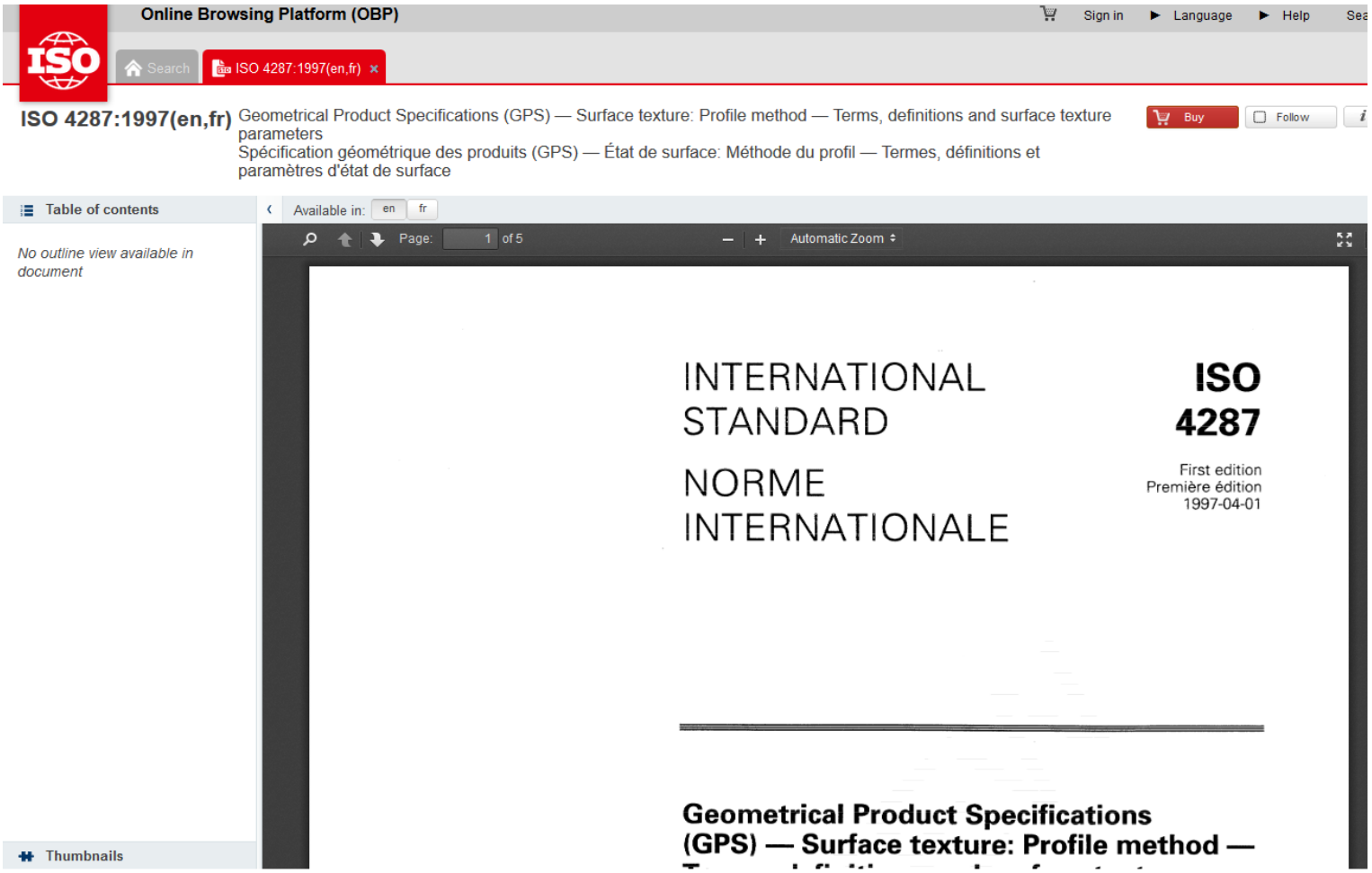

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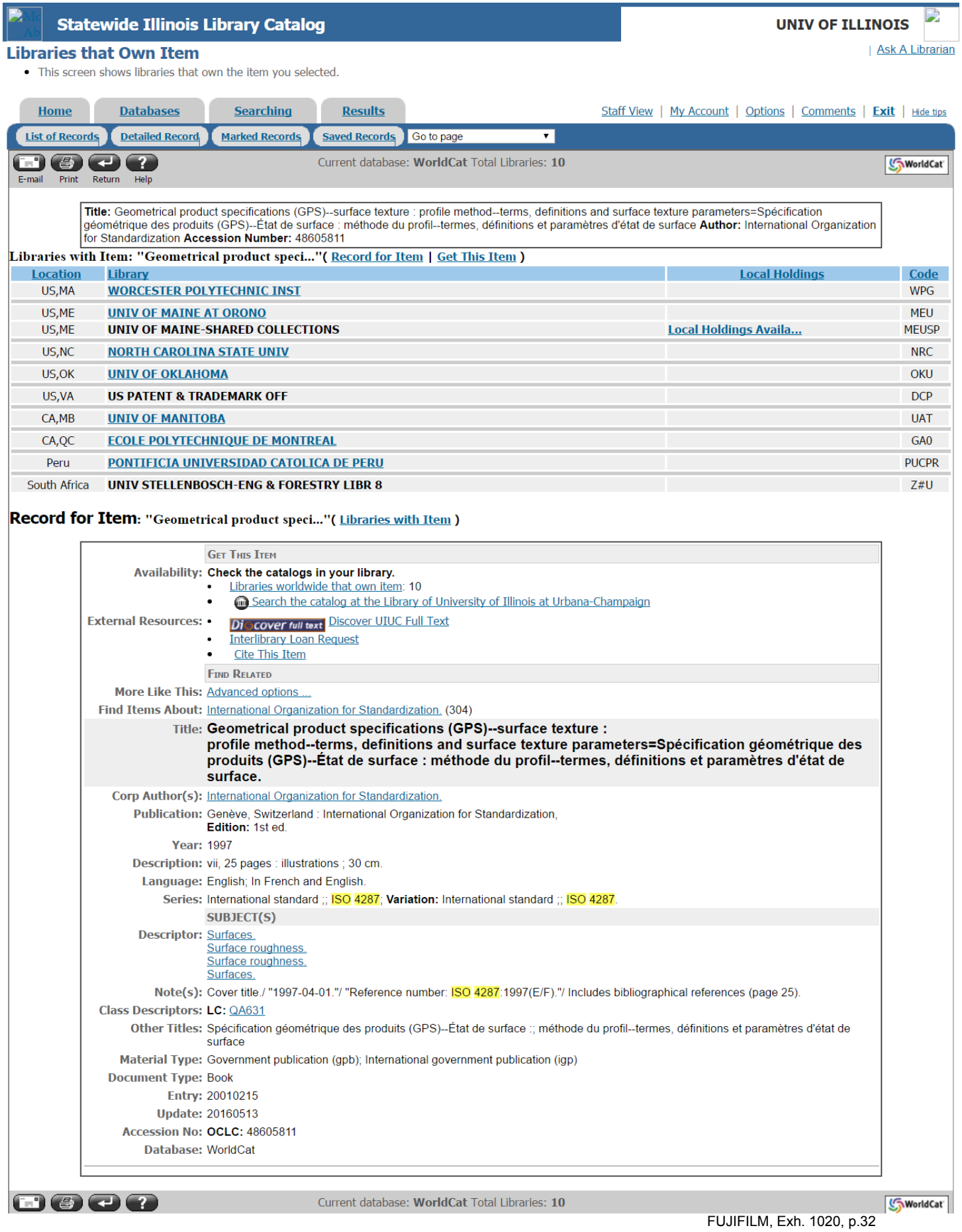

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Corp Author(s): International Organization for Standardization.

Publication: Genève, Switzerland : International Organization for Standardization, **Edition:** 1st ed.

Year: 1997

Description: vii, 25 pages : illustrations ; 30 cm.

Language: English; In French and English.

Series: International standard ;; ISO 4287; **Variation:** International standard ;; ISO 4287.

SUBJECT(S)

Descriptor: Surfaces.
Surface roughness.
Surface roughness.
Surfaces.

Note(s): Cover title./ "1997-04-01."/ "Reference number: ISO 4287:1997(E/F)."/ Includes bibliographical references (page 25).

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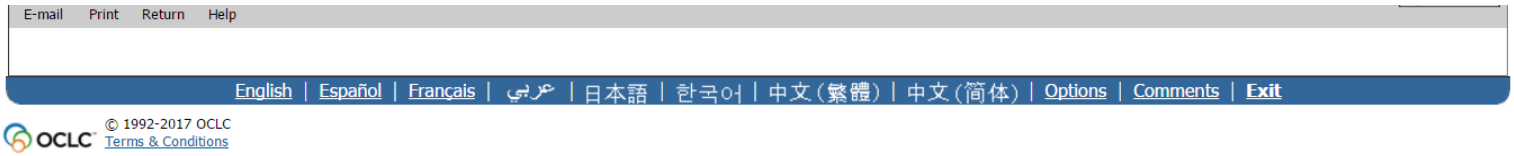

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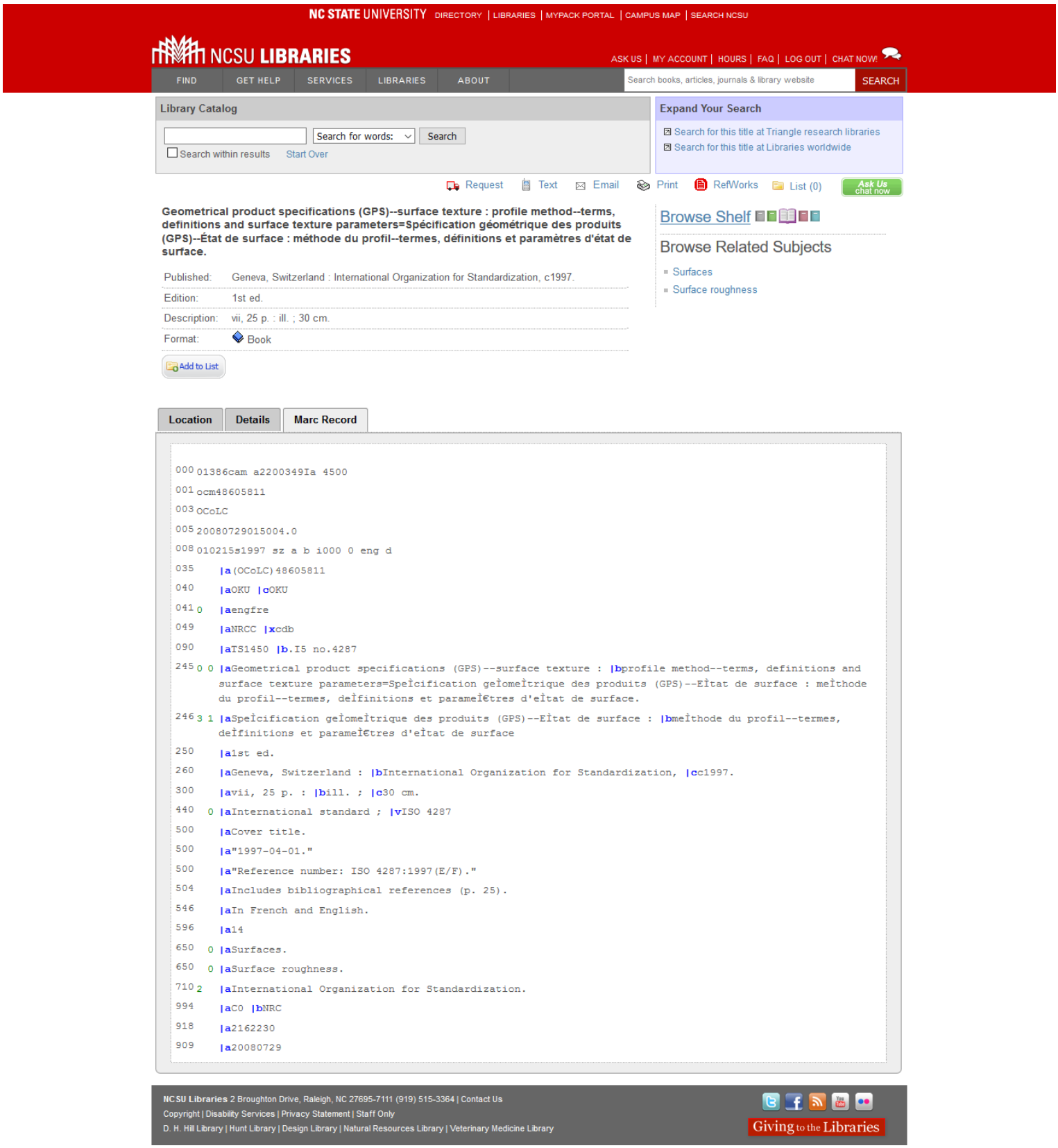

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546    |aIn French and English.
596    |a14
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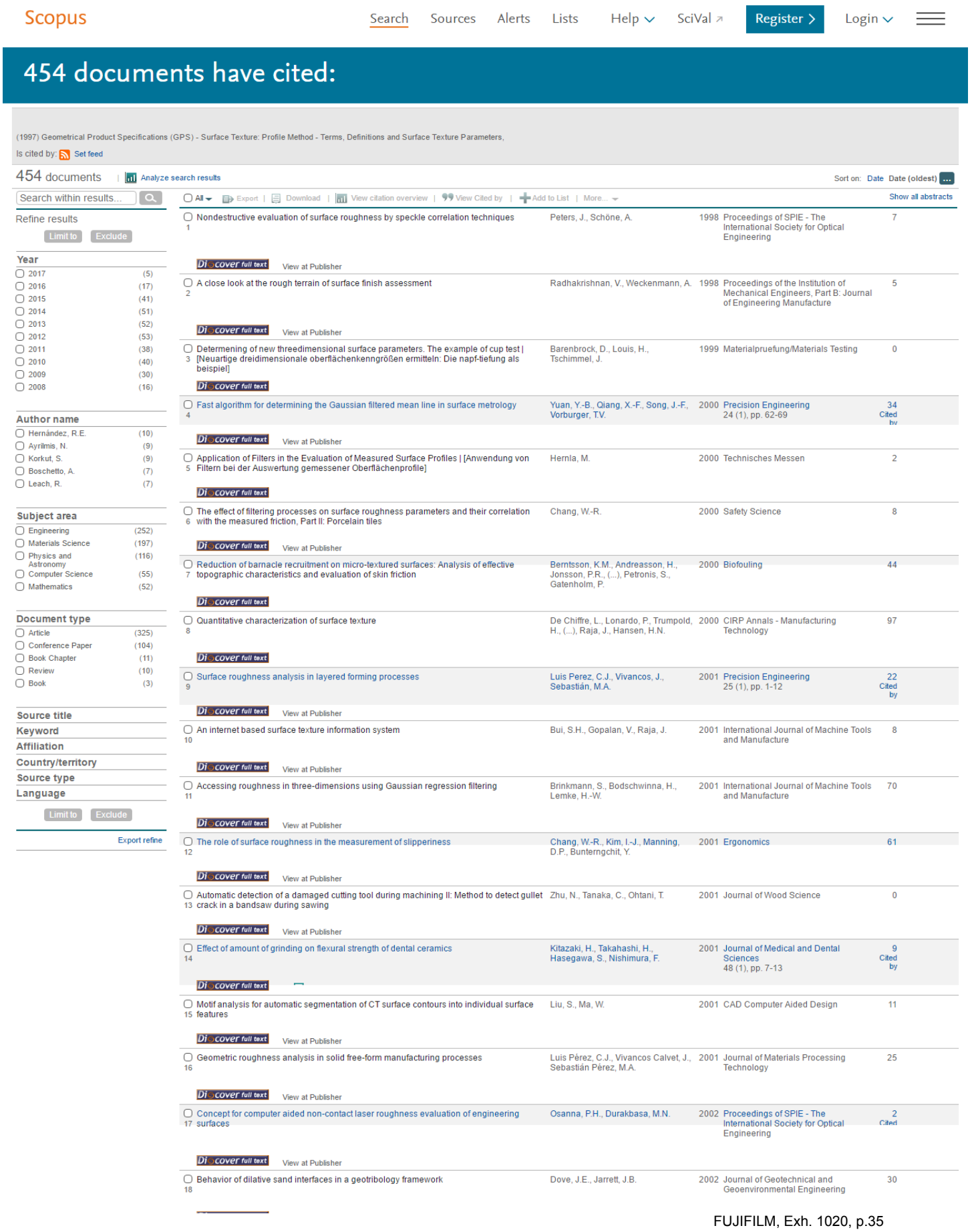

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Hernández, R.E. (10)
Ayrilmis, N. (9)
Korkut, S. (9)
Boschetto, A. (7)
Leach, R. (7)

Subject area

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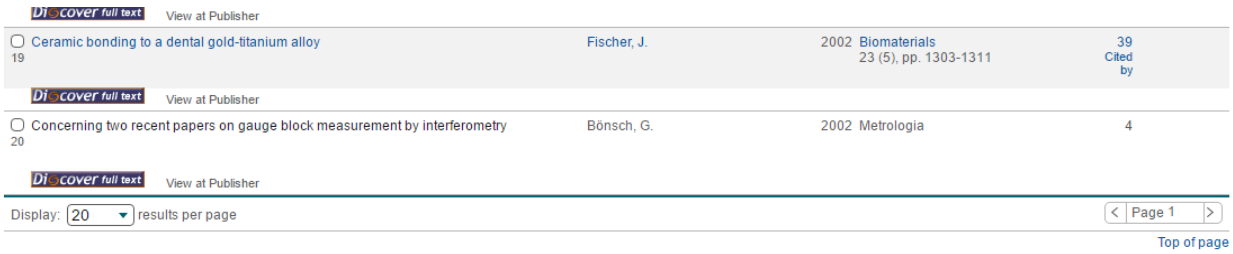

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Document details

Proceedings of SPIE - The International Society for Optical Engineering

Volume 3399, 1998, Pages 45-56

Process Control and Sensors for Manufacturing; San Antonio, TX; United States; 31 March 1998 through 1 April 1998; Code 59525

Nondestructive evaluation of surface roughness by speckle correlation techniques (Conference Paper)

Peters, J., Schöne, A.

University of Bremen, Department of Mechanical Engineering, FB4/IMRS, POBox 330440, 28334 Bremen, Germany

View references (23)

Abstract

The most established way to inspect surface roughness of machined surfaces is to measure with profilometers. These techniques are not applicable for on-line inspection. A few decades ago, the correlation between laser speckles of different light wavelengths and surface roughness was discovered. Since then several authors have been working on this topic. In measuring systems which are considered in this paper, the surface which is to be inspected is illuminated by a polychromatic laser beam. The scattered light is converted by an optical system, which ensures that the product of wavelength times focal length is constant. In the Fourier plane of each subsystem a CCD-array is installed. The CCD- data are captured by a frame grabber and stored for evaluation in a computer. One major problem in industrial processes where surface roughness measurements had been tried was that the inspected metal workpieces may be tilted and, therefore, the direction of spectral reflection changes. In the method discussed in this paper an approximate value of the surface roughness can be obtained by determining the difference between the zero orders of the scattering patterns of the wavelengths. This difference can be approximated by the position of the maximum of the 2D-cross correlation function of related speckle patterns. The main benefit of the method described is the feasibility of measuring roughness during machining or other types of continuous or semi-continuous production processes. This is achieved by a synchronous detection of speckle patterns of the different wavelengths used. In the pilot project the shutter speed of the cameras is 1/10000 seconds, therefore, in this case only frequencies above 1kHz disturb the measuring results.

Author keywords

Correlation; Holographical optical element; Roughness; Speckle; Surface

Indexed keywords

Engineering controlled terms: Charge coupled devices; Correlation methods; Holographic optical elements; Nondestructive examination; Optical systems; Speckle; Spectrum analysis

Engineering uncontrolled terms: Speckle correlation techniques

Engineering main heading: Surface roughness

ISSN: 0277786X **CODEN:** PSISD **Source Type:** Conference Proceeding **Original language:** English

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Editors: Bossi R.H.,Pepper D.M. **Sponsors:** SPIE,FAA,NTIAC,Federal Highway Administration

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1 Beckmann, P., Spizzichino, A.
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